

1    WHAT IS CLAIMED IS:

2            1. A catalyst composition comprising silver and an  
3            alkali metal promoter deposited on a carrier,  
4            which alkali metal promoter comprises potassium  
5            in a quantity of at least 5  $\mu\text{mole/g}$ , relative to  
6            the weight of the catalyst composition; and, an  
7            alkali metal selected from the group consisting  
8            of lithium, sodium and mixtures thereof in a  
9            quantity of at least 1  $\mu\text{mole/g}$ , relative to the  
10           weight of the catalyst composition.

1            2. The catalyst composition of claim 1, wherein the  
2            potassium promoter is present at a concentration  
3            of at least 10  $\mu\text{mole/g}$ , relative to the weight  
4            of the catalyst composition.

1            3. The catalyst composition of claim 1, wherein  
2            lithium is present at a concentration of at  
3            least 5  $\mu\text{mole/g}$ , relative to the weight of the  
4            catalyst composition.

1            4. The catalyst composition of claim 1, wherein  
2            sodium is present at a concentration of at least  
3            5  $\mu\text{mole/g}$ , relative to the weight of the  
4            catalyst composition.

1            5. The catalyst composition of claim 1, wherein  
2            lithium and sodium are each present at a

3 concentration of at least 10  $\mu$ mole/g, relative  
4 to the weight of the catalyst composition.

1 6. The catalyst composition of claim 1, wherein the  
2 carrier comprises an  $\alpha$ -alumina having a BET  
3 surface area of 0.1  $\text{m}^2/\text{g}$  to 25  $\text{m}^2/\text{g}$ , and an  
4 apparent porosity of from 0.1 ml/g to 1.2 ml/g,  
5 measured by water absorption.

1 7. The catalyst composition of claim 1, wherein the  
2 carrier comprises a silver bonded calcium  
3 carbonate having a crush strength of at least 22  
4 N.

1 8. The catalyst composition of claim 1, wherein the  
2 carrier comprises a silver bonded calcium  
3 carbonate wherein the weight ratio of silver to  
4 calcium carbonate is from 1:5 to 1:100.

1 9. The catalyst composition of claim 1, wherein the  
2 carrier comprises a silver bonded calcium  
3 carbonate having a specific surface area of from  
4 1  $\text{m}^2/\text{g}$  to 20  $\text{m}^2/\text{g}$ .

1 10. The catalyst composition of claim 1, wherein the  
2 carrier comprises a silver bonded calcium  
3 carbonate having a specific surface area of from  
4 3  $\text{m}^2/\text{g}$  to 15  $\text{m}^2/\text{g}$ .

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2 11. The catalyst composition of claim 1, wherein the  
3 carrier comprises a silver bonded calcium  
4 carbonate having an apparent porosity of from  
5 0.05 ml/g to 2 ml/g.

1 12. The catalyst composition of claim 1, wherein the  
2 carrier comprises a silver bonded calcium  
3 carbonate having an apparent porosity of from  
4 0.1 ml/g to 1.5 ml/g.

1 13. The catalyst composition of claim 1, wherein  
2 the carrier comprises at least 95 %w  $\alpha$ -alumina.

1 14. A process for preparing an olefin oxide which  
2 process comprises:

3 reacting an olefin having at least 3 carbon  
4 atoms with oxygen in the presence of a  
5 catalyst composition comprising silver and  
6 an alkali metal promoter deposited on a  
7 carrier, which alkali metal promoter  
8 comprises potassium in a quantity of at  
9 least 5  $\mu$ mole/g, relative to the weight of  
10 the catalyst composition, and an alkali  
11 metal selected from the group consisting of  
12 lithium, sodium and mixtures thereof in a  
13 quantity of at least 1  $\mu$ mole/g, relative to  
14 the weight of the catalyst composition.

1        15. The process of claim 14 which is further  
2        conducted in the presence of a nitrate or nitrite  
3        forming compound.

1        16. The process of claim 14, wherein the potassium  
2        promoter is present at a concentration of at  
3        least 10  $\mu\text{mole/g}$ .

1        17. The process of claim 14, wherein lithium is  
2        present at a concentration of at least 5  $\mu\text{mole/g}$ .

1        18. The process of claim 14, wherein sodium is  
2        present at a concentration of at least 5  $\mu\text{mole/g}$ .

1        19. The process of claim 14, wherein lithium and  
2        sodium are each present at a concentration of at  
3        least 10  $\mu\text{mole/g}$ .

1        20. The process of claim 14, wherein the carrier  
2        comprises an  $\alpha$ -alumina having a BET surface area  
3        of 0.1  $\text{m}^2/\text{g}$  to 25  $\text{m}^2/\text{g}$ , and an apparent porosity  
4        of from 0.1  $\text{ml/g}$  to 1.2  $\text{ml/g}$ , measured by water  
5        absorption.

1        21. The process of claim 14, wherein the carrier  
2        comprises a silver bonded calcium carbonate  
3        having a crush strength of at least 22 N.

1        22. The process of claim 14, wherein the carrier  
2        comprises a silver bonded calcium carbonate

3            wherein the weight ratio of silver to calcium  
4            carbonate is from 1:5 to 1:100.

1            23. The process of claim 14, wherein the carrier  
2            comprises a silver bonded calcium carbonate  
3            having a specific surface area of from 1 m<sup>2</sup>/g to  
4            20 m<sup>2</sup>/g.

1            24. The process of claim 14, wherein the carrier  
2            comprises a silver bonded calcium carbonate  
3            having a specific surface area of from 3 m<sup>2</sup>/g to  
4            15 m<sup>2</sup>/g.

1            25. The process of claim 14, wherein the carrier  
2            comprises a silver bonded calcium carbonate  
3            having an apparent porosity of from 0.05 ml/g to  
4            2 ml/g.

5            26. The process of claim 14, wherein the carrier  
6            comprises a silver bonded calcium carbonate  
7            having an apparent porosity of from 0.1 ml/g to  
8            1.5 ml/g.

9            27. The process of claim 14, wherein the carrier  
10           comprises at least 95 %w  $\alpha$ -alumina.

1            28. A method of making a 1,2-diol or a 1,2-diol  
2            ether comprising converting an olefin oxide into  
3            a 1,2-diol or 1,2-diol ether wherein the olefin  
4            oxide has been obtained by a process comprising  
5            reacting an olefin having at least 3 carbon atoms

6           with oxygen in the presence of a catalyst  
7           composition comprising silver and an alkali metal  
8           promoter deposited on a carrier, which alkali  
9           metal promoter comprises potassium in a quantity  
10          of at least 5  $\mu$ mole/g, relative to the weight of  
11          the catalyst composition, and an alkali metal  
12          selected from the group consisting of lithium,  
13          sodium and mixtures thereof in a quantity of at  
14          least 1  $\mu$ mole/g, relative to the weight of the  
15          catalyst composition.